

### Claims


We claim:

1. A polymer comprising at least 50 mol% of one or more C3 to C40 olefins where the polymers has:
  - a) a Dot T-Peel of 1 Newton or more on Kraft paper;
  - b) an Mw of 10,000 to 100,000; and
  - c) a branching index (g') of 0.98 or less measured at the Mz of the polymer when the polymer has an Mw of 10,000 to 60,000, or a branching index (g') of 0.95 or less measured at the Mz of the polymer when the polymer has an Mw of 10,000 to 100,000.
2. The polymer of claim 1 wherein the polymer has:
  - a) a Dot T-Peel of 1 Newton or more on Kraft paper;
  - b) a branching index (g') of 0.98 or less measured at the Mz of the polymer;
  - c) a Mw of 10,000 to 60,000; and
  - d) a heat of fusion of 1 to 50 J/g.
3. The polymer of claim 1 where the polymer is a homopolypropylene or a copolymer of propylene and up to 5 mole% ethylene having:
  - a) an isotactic run length of 1 to 30,
  - b) a percent of r dyad of greater than 20%, and
  - c) a heat of fusion of between 1 and 70 J/g.
4. The polymer of claim 1 wherein the polymer comprises propylene and less than 15 mole % of ethylene.

5. The polymer of claim 1 wherein the polymer has a melt viscosity of 7000 mPa•sec or less at 190°C.
6. The polymer of claim 1 wherein the polymer has a melt viscosity of 5000 mPa•sec or less at 190°C.
7. The polymer of claim 1 wherein the polymer has a melt viscosity of between 250 and 6000 mPa•sec at 190°C.
8. The polymer of claim 1 wherein the polymer has a melt viscosity of between 500 and 3000 mPa•sec at 190°C.
9. The polymer of claim 4 wherein the polymer has a Tg of 0°C or less.
10. The polymer of claim 4 wherein the polymer has a Tg of -10°C or less.
11. The polymer of claim 1 wherein the polymer has an Mw of 10,000 to 75,000 and a branching index of 0.6 or less.
12. The polymer of claim 1 wherein the polymer has an Mw of 10,000 to 50,000 and a branching index of 0.7 or less.
13. The polymer of claim 1 wherein the polymer has an Mw of 10,000 to 30,000 and a branching index of 0.98 or less.
14. The polymer of claim 1 wherein the polymer has a branching index (g') of 0.90 or less measured at the Mz of the polymer.
15. The polymer of claim 1 wherein the SEC graph of the polymer is bi- or multi-modal.

16. The polymer of claim 1 wherein the polymer has an amorphous content of at least 50%.
17. The polymer of claim 1 wherein the polymer has
  - a) a peak melting point between 60 and 190°C;
  - b) a heat of fusion of 0 to 70 J/g; and
  - c) a melt viscosity of 8000 mPa•sec or less at 190°C.
18. The polymer of claim 1 wherein the polymer has:
  - a) a Tg of -10°C or less;
  - b) a melt viscosity between 2000 and 6000 mPa•sec;
  - c) a molecular weight distribution (Mw/Mn) of at least 5; and
  - d) a bi- or multi-modal SEC graph of the polymer.
19. The polymer of claim 1 wherein the polymer has a crystallinity of at least 5%.
20. The polymer of claim 1 wherein the polymer has 20 wt.% or more of hexane room temperature soluble fraction and 50 wt % or less of Soxhlet heptane insolubles.
21. The polymer of claim 1 wherein the polymer comprises less than 3.0 mole % ethylene.
22. The polymer of claim 1 wherein the polymer comprises less than 1.0 mole % ethylene.
23. A composition comprising the polymer of claim 1 and a functionalized wax.

24. A composition comprising the polymer of claim 1 and a wax.
25. A composition comprising the polymer of claim 1 and a hydrocarbon resin.
26. The polymer of claim 1 further comprising diolefin.
27. The polymer of claim 26 wherein the diolefin comprises one or more C4 to C40 diolefins.
28. The polymer of claim 26 wherein the diolefin is selected from the group consisting of 1,6-heptadiene, 1,7-octadiene, 1,8-nonadiene, 1,9-decadiene, 1,10-undecadiene, 1,11-dodecadiene, 1,12-tridecadiene, 1,13-tetradecadiene, cyclopentadiene, vinylnorbornene, norbornadiene, ethylidene norbornene, divinylbenzene, dicyclopentadiene, polybutadienes having an Mw less than 1000 g/mol, or combinations thereof.
29. The polymer of claim 1 wherein the polymer has an Mz/Mn of 2 to 200.
30. The polymer of claim 1 wherein the polymer has an Mz of 15,000 to 500,000.
31. The polymer of claim 1 wherein the polymer has a SAFT of 50 to 150°C.
32. The polymer of claim 1 wherein the polymer has a Shore A hardness of 95 or less.
33. The polymer of claim 1 wherein the polymer has a set time of 5 seconds or less.

34. The polymer of claim 1 wherein the polymer has an Mw/Mn of 2 to 75.
35. A continuous process to produce a branched olefin polymer comprising: 
- 1) selecting a first catalyst component capable of producing a polymer having an Mw of 100,000 or less and a crystallinity of 5% or less under selected polymerization conditions;
  - 2) selecting a second catalyst component capable of producing polymer having an Mw of 100,000 or less and a crystallinity of 20% or more at the selected polymerization conditions;
  - 3) contacting the catalyst components in the presence of one or more activators with one or more C3 to C40 olefins; and,
  - 4) at a temperature of greater than 100°C;
  - 5) at a residence time of 120 minutes or less;
  - 6) wherein the ratio of the first catalyst to the second catalyst is from 1:1 to 50:1;
  - 7) wherein the activity of the catalyst components is at least 50 kilograms of polymer per gram of the catalyst compounds; and wherein at least 80% of the olefins are converted to polymer.
36. The process of claim 35 wherein the olefin comprises propylene.
37. The process of claim 35 wherein the first catalyst component comprises a non-stereospecific metallocene catalyst compound.
38. The process of claim 35 wherein the first catalyst component comprises a stereospecific metallocene catalyst compound.
39. The process of claim 35 wherein the second catalyst component comprises a stereospecific metallocene catalyst compound.

40. The process of claim 35 wherein the first catalyst component comprises one or more of
- dimethylsilyl(tetramethylcyclopentadienyl)(cyclododecylamido) titanium dichloride,
  - dimethylsilyl(tetramethylcyclopentadienyl)(cyclohexyl-amido) titanium dichloride,
  - dimethylsilyl(tetramethylcyclopentadienyl)(1-adamantylamido) titanium dichloride,
  - dimethylsilyl(tetramethylcyclopentadienyl)(t-butylamido) titanium dichloride,
  - dimethylsilyl(tetramethylcyclopentadienyl)(s-butylamido) titanium dichloride,
  - dimethylsilyl(tetramethylcyclopentadienyl)(n-butylamido) titanium dichloride,
  - dimethylsilyl(tetramethylcyclopentadienyl)(exo-2-norbomylamido) titanium dichloride,
  - diethylsilyl(tetramethylcyclopentadienyl)(cyclododecyl-amido) titanium dichloride,
  - diethylsilyl(tetramethylcyclopentadienyl)(exo-2-norbornylamido) titanium dichloride,
  - diethylsilyl(tetramethylcyclopentadienyl)(cyclohexyl-amido) titanium dichloride,
  - diethylsilyl(tetramethylcyclopentadienyl)(1-adamantylamido) titanium dichloride,
  - methylene(tetramethylcyclopentadienyl)(cyclododecyl-amido) titanium dichloride,
  - methylene(tetramethylcyclopentadienyl)(exo-2-norbornylamido) titanium dichloride, methylene(tetramethylcyclopentadienyl)(cyclohexylamido) titanium dichloride,

methylene(tetramethylcyclopentadienyl)(1-adamantylamido) titanium  
dichloride,  
dimethylsilyl(tetramethylcyclopentadienyl)(cyclododecylamido) titanium  
dimethyl,  
dimethylsilyl(tetramethylcyclopentadienyl)(exo-2-norbornylamido)  
titanium dimethyl,  
dimethylsilyl(tetramethylcyclopentadienyl)(cyclohexyl-amido) titanium  
dimethyl,  
dimethylsilyl(tetramethylcyclopentadienyl)(1-adamantylamido) titanium  
dimethyl,  
dimethylsilyl(2,5-dimethylcyclopentadienyl)(cyclododecylamido) titanium  
dichloride,  
dimethylsilyl(2,5-dimethylcyclopentadienyl)(exo-2-norbornylamido)  
titanium dichloride,  
dimethylsilyl(2,5-dimethylcyclopentadienyl)(cyclohexylamido) titanium  
dichloride,  
dimethylsilyl(2,5-dimethylcyclopentadienyl)(1-adamantylamido) titanium  
dichloride,  
dimethylsilyl(3,4-dimethylcyclopentadienyl)(cyclododecylamido) titanium  
dichloride,  
dimethylsilyl(3,4-dimethylcyclopentadienyl)(exo-2-norbornylamido)  
titanium dichloride,  
dimethylsilyl(3,4-dimethylcyclopentadienyl)(cyclohexylamido) titanium  
dichloride,  
dimethylsilyl(3,4-dimethylcyclopentadienyl)(1-adamantylamido) titanium  
dichloride,  
dimethylsilyl(2-ethyl-5-  
methylcyclopentadienyl)(cyclododecylamido)titanium dichloride,

dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(exo-2-norbornylamido) titanium dichloride, dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(cyclohexylamido) titanium dichloride, dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(1-adamantylamido) titanium dichloride, dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(cyclododecylamido)titanium dichloride, dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(exo-2-norbornylamido) titanium dichloride, dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(cyclohexylamido) titanium dichloride, dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(1-adamantylamido) titanium dichloride, dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(cyclododecylamido) titanium dichloride, dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(exo-2-norbornylamido) titanium dichloride, dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(cyclohexylamido) titanium dichloride, dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(1-adamantylamido) titanium dichloride, dimethylsilyl(2-tetrahydroindenyl)(cyclododecylamido) titanium dichloride, dimethylsilyl(2-tetrahydroindenyl)(cyclohexylamido) titanium dichloride, dimethylsilyl(2-tetrahydroindenyl)(1-adamantylamido) titanium dichloride, dimethylsilyl(2-tetrahydroindenyl)(exo-2-norbornylamido) titanium dichloride, dimethylsilyl(tetramethylcyclopentadienyl)(cyclododecylamido) titanium dimethyl, dimethylsilyl(tetramethylcyclopentadienyl)(cyclohexyl-amido) titanium

dimethyl,  
dimethylsilyl(tetramethylcyclopentadienyl)(1-adamantylamido) titanium  
dimethyl,  
dimethylsilyl(tetramethylcyclopentadienyl)(t-butylamido) titanium  
dimethyl,  
dimethylsilyl(tetramethylcyclopentadienyl)(s-butylamido) titanium  
dimethyl,  
dimethylsilyl(tetramethylcyclopentadienyl)(n-butylamido) titanium  
dimethyl,  
dimethylsilyl(tetramethylcyclopentadienyl)(exo-2-norbomylamido)  
titanium dimethyl,  
diethylsilyl(tetramethylcyclopentadienyl)(cyclododecyl-amido) titanium  
dimethyl,  
diethylsilyl(tetramethylcyclopentadienyl)(exo-2-norbornylamido) titanium  
dimethyl,  
diethylsilyl(tetramethylcyclopentadienyl)(cyclohexyl-amido) titanium  
dimethyl,  
diethylsilyl(tetramethylcyclopentadienyl)(1-adamantylamido) titanium  
dimethyl,  
methylene(tetramethylcyclopentadienyl)(cyclododecyl-amido) titanium  
dimethyl,  
methylene(tetramethylcyclopentadienyl)(exo-2-norbornylamido) titanium  
dimethyl, methylene(tetramethylcyclopentadienyl)(cyclohexylamido)  
titanium dimethyl,  
methylene(tetramethylcyclopentadienyl)(1-adamantylamido) titanium  
dimethyl,  
dimethylsilyl(tetramethylcyclopentadienyl)(cyclododecylamido) titanium  
dimethyl,  
dimethylsilyl(tetramethylcyclopentadienyl)(exo-2-norbornylamido)  
titanium dimethyl,

dimethylsilyl(tetramethylcyclopentadienyl)(cyclohexyl-amido) titanium  
 dimethyl,  
 dimethylsilyl(tetramethylcyclopentadienyl)(1-adamantylamido) titanium  
 dimethyl,  
 dimethylsilyl(2,5-dimethylcyclopentadienyl)(cyclododecylamido) titanium  
 dimethyl,  
 dimethylsilyl(2,5-dimethylcyclopentadienyl)(exo-2-norbornylamido)  
 titanium dimethyl,  
 dimethylsilyl(2,5-dimethylcyclopentadienyl)(cyclohexylamido) titanium  
 dimethyl,  
 dimethylsilyl(2,5-dimethylcyclopentadienyl)(1-adamantylamido) titanium  
 dimethyl,  
 dimethylsilyl(3,4-dimethylcyclopentadienyl)(cyclododecylamido) titanium  
 dimethyl,  
 dimethylsilyl(3,4-dimethylcyclopentadienyl)(exo-2-norbornylamido)  
 titanium dimethyl,  
 dimethylsilyl(3,4-dimethylcyclopentadienyl)(cyclohexylamido) titanium  
 dimethyl,  
 dimethylsilyl(3,4-dimethylcyclopentadienyl)(1-adamantylamido) titanium  
 dimethyl,  
 dimethylsilyl(2-ethyl-5-  
 methylcyclopentadienyl)(cyclododecylamido)titanium dimethyl,  
 dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(exo-2-norbornylamido)  
 titanium dimethyl, dimethylsilyl(2-ethyl-5-  
 methylcyclopentadienyl)(cyclohexylamido) titanium dimethyl,  
 dimethylsilyl(2-ethyl-5-methylcyclopentadienyl)(1-adamantylamido)  
 titanium dimethyl,  
 dimethylsilyl(3-ethyl-4-  
 methylcyclopentadienyl)(cyclododecylamido)titanium dimethyl,

dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(exo-2-norbornylamido) titanium dimethyl,  
 dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(cyclohexylamido) titanium dimethyl,  
 dimethylsilyl(3-ethyl-4-methylcyclopentadienyl)(1-adamantylamido) titanium dimethyl,  
 dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(cyclododecylamido) titanium dimethyl,  
 dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(exo-2-norbornylamido) titanium dimethyl,  
 dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(cyclohexylamido) titanium dimethyl,  
 dimethylsilyl(2-ethyl-3-hexyl-5-methyl-4-octylcyclopentadienyl)(1-adamantylamido) titanium dimethyl,  
 dimethylsilyl(2-tetrahydroindenyl)(cyclododecylamido) titanium dimethyl,  
 dimethylsilyl(2-tetrahydroindenyl)(cyclohexylamido) titanium dimethyl,  
 dimethylsilyl(2-tetrahydroindenyl)(1-adamantylamido) titanium dimethyl,  
 and  
 dimethylsilyl(2-tetrahydroindenyl)(exo-2-norbornylamido) titanium dimethyl.

41. The process of claim 35 wherein the second catalyst component comprises one or more of the racemic versions of:  
 dimethylsilyl (2-methyl-4-phenylindenyl) zirconium dichloride,  
 dimethylsilyl (2-methyl-4-phenylindenyl) zirconium dimethyl,  
 dimethylsilyl (2-methyl-4-phenylindenyl) hafnium dichloride,  
 dimethylsilyl (2-methyl-4-phenylindenyl) hafnium dimethyl,  
 dimethylsilyl bis(indenyl)hafnium dimethyl,  
 dimethylsilyl bis(indenyl)hafnium dichloride,

dimethylsilyl bis(indenyl)zirconium dimethyl,  
 dimethylsilyl bis(indenyl)zirconium dichloride,  
 the racemic isomers of:  
 dimethylsilanediylbis(2-methylindenyl)metal dichloride;  
 dimethylsilanediylbis(indenyl)metal dichloride;  
 dimethylsilanediylbis(indenyl)metal dimethyl;  
 dimethylsilanediylbis(tetrahydroindenyl)metal dichloride;  
 dimethylsilanediylbis(tetrahydroindenyl)metal dimethyl;  
 dimethylsilanediylbis(indenyl)metal diethyl; and  
 dibenzylsilanediylbis(indenyl)metal dimethyl;  
 wherein the metal can be chosen from Zr, Hf, or Ti.

42. The process of claim 35 wherein the activator comprises an alumoxane.
43. The process of claim 35 wherein the activator comprises an ionizing compound.
44. The process of claim 35 wherein the activator comprises a non-coordinating anion.
45. The process of claim 35 wherein the activator comprises one or more of methylalumoxane,  
 trimethylammonium tetraphenylborate,  
 triethylammonium tetraphenylborate,  
 tripropylammonium tetraphenylborate,  
 tri(n-butyl)ammonium tetraphenylborate,  
 tri(t-butyl)ammonium tetraphenylborate,  
 N,N-dimethylanilinium tetraphenylborate,  
 N,N-diethylanilinium tetraphenylborate,  
 N,N-dimethyl-(2,4,6-trimethylanilinium) tetraphenylborate,

trimethylammonium tetrakis(pentafluorophenyl)borate,  
 triethylammonium tetrakis(pentafluorophenyl)borate,  
 tripropylammonium tetrakis(pentafluorophenyl)borate,  
 tri(n-butyl)ammonium tetrakis(pentafluorophenyl)borate,  
 tri(sec-butyl)ammonium tetrakis(pentafluorophenyl) borate,  
 N,N-dimethylanilinium tetrakis(pentafluorophenyl) borate,  
 N,N-diethylanilinium tetrakis(pentafluorophenyl) borate,  
 N,N-dimethyl-(2,4,6-trimethylanilinium) tetrakis(pentafluorophenyl)  
 borate, trimethylammonium tetrakis-(2,3,4,6-tetrafluorophenyl)borate,  
 triethylammonium tetrakis-(2,3,4,6-tetrafluorophenyl) borate,  
 tripropylammonium tetrakis-(2,3,4,6-tetrafluorophenyl) borate,  
 tri(n-butyl)ammonium tetrakis-(2,3,4,6-tetrafluoro-phenyl) borate,  
 dimethyl(t-butyl)ammonium tetrakis-(2,3,4,6-tetrafluorophenyl) borate,  
 N,N-dimethylanilinium tetrakis-(2,3,4,6-tetrafluorophenyl) borate,  
 N,N-diethylanilinium tetrakis-(2,3,4,6-tetrafluorophenyl) borate, and  
 N,N-dimethyl-(2,4,6-trimethylanilinium)tetrakis-(2,3,4,6-  
 tetrafluorophenyl) borate;  
 di-(i-propyl)ammonium tetrakis(pentafluorophenyl) borate;  
 dicyclohexylammonium tetrakis(pentafluorophenyl) borate;  
 triphenylphosphonium tetrakis(pentafluorophenyl) borate;  
 tri(o-tolyl)phosphonium tetrakis(pentafluorophenyl) borate; and  
 tri(2,6-dimethylphenyl)phosphonium tetrakis(pentafluorophenyl) borate.

46. The process of claim 35 wherein the first catalyst component is capable of polymerizing macromonomers having reactive termini; and the second component is capable of producing macromonomers having reactive termini.
47. The process of claim 35 wherein the first catalyst component comprises one or more of

di(p-triethylsilylphenyl)methylene(cyclopentadienyl)(3,8-di-t-butylfluorenyl) zirconium dichloride, di(p-triethylsilylphenyl)methylene(cyclopentadienyl)(3,8-di-t-butylfluorenyl) hafnium dichloride, di(p-triethylsilylphenyl)methylene(cyclopentadienyl)(3,8-di-t-butylfluorenyl) zirconium dimethyl, di(p-triethylsilylphenyl)methylene(cyclopentadienyl)(3,8-di-t-butylfluorenyl) hafnium dimethyl, di(p-triethylsilylphenyl)methylene(cyclopentadienyl)(3,3,6,6,9,9,12,12-octamethyl-4,4,5,5,8,8,9,9-octahydrodibenzyl[b,h]fluorenyl) zirconium dichloride, di(p-triethylsilylphenyl)methylene(cyclopentadienyl)(3,3,6,6,9,9,12,12-octamethyl-4,4,5,5,8,8,9,9-octahydrodibenzyl[b,h]fluorenyl) hafnium dichloride, di(p-triethylsilylphenyl)methylene(cyclopentadienyl)(3,3,6,6,9,9,12,12-octamethyl-4,4,5,5,8,8,9,9-octahydrodibenzyl[b,h]fluorenyl) zirconium dimethyl, di(p-triethylsilylphenyl)methylene(cyclopentadienyl)(3,3,6,6,9,9,12,12-octamethyl-4,4,5,5,8,8,9,9-octahydrodibenzyl[b,h]fluorenyl) hafnium dimethyl, and the meso forms of:

dimethylsilylbis(indenyl) zirconium dichloride, dimethylsilylbis(indenyl) zirconium dimethyl, ethylenebis(indenyl) zirconium dichloride, ethylenebis(indenyl) zirconium dimethyl, dimethylsilylbis(indenyl) hafnium dichloride, dimethylsilylbis(indenyl) hafnium dimethyl, ethylenebis(indenyl) hafnium dichloride, ethylenebis(indenyl) hafnium dimethyl, dimethylsilylbis(tetrahydroindenyl) zirconium dichloride, dimethylsilylbis(tetrahydroindenyl) zirconium dimethyl, ethylenebis(tetrahydroindenyl) zirconium dichloride, ethylenebis(tetrahydroindenyl) zirconium dimethyl, dimethylsilylbis(tetrahydroindenyl) hafnium dichloride,

dimethylsilylbis(tetrahydroindenyl) hafnium dimethyl, ethylenebis(tetrahydroindenyl) hafnium dichloride, ethylenebis(tetrahydroindenyl) hafnium dimethyl, dimethylsilylbis(2-methylindenyl) zirconium dichloride, dimethylsilylbis(2-methylindenyl) zirconium dimethyl, ethylenebis(2-methylindenyl) zirconium dichloride, ethylenebis(2-methylindenyl) zirconium dimethyl, dimethylsilylbis(2-methylindenyl) hafnium dichloride, dimethylsilylbis(2-methylindenyl) hafnium dimethyl, ethylenebis(2-methylindenyl) hafnium dichloride, and ethylenebis(2-methylindenyl) hafnium dimethyl.

48. The process of claim 35 wherein the monomers comprise propylene and butene.
49. The process of claim 35 further comprising diolefin.
50. The process of claim 49 wherein the diolefin comprises one or more C4 to C40 diolefins.
51. The process of claim 50 wherein the diolefin is selected from the group consisting of 1,6-heptadiene, 1,7-octadiene, 1,8-nonadiene, 1,9-decadiene, 1,10-undecadiene, 1,11-dodecadiene, 1,12-tridecadiene, 1,13-tetradecadiene, cyclopentadiene, vinylnorbornene, norbornadiene, ethylidene norbornene, divinylbenzene, dicyclopentadiene, polybutadienes having an Mw less than 1000 g/mol, or combinations thereof.
52. The process of claim 49 further comprising one or more dienes selected from the group consisting of 1,6-heptadiene, 1,7-octadiene, 1,8-nonadiene, 1,9-decadiene, 1,10-undecadiene, 1,11-dodecadiene, 1,12-tridecadiene, 1,13-tetradecadiene, cyclopentadiene, vinylnorbornene, norbornadiene,

ethylidene norbornene, divinylbenzene, dicyclopentadiene, polybutadienes having an Mw less than 1000 g/mol, or combinations thereof.

53. The process of claim 35 wherein the reaction zone is a gas phase reactor.
54. The process of claim 35 wherein the reaction zone is a solution phase reactor.
55. The process of claim 35 wherein the reaction zone is a slurry phase reactor.
56. The process of claim 36 wherein the reaction zone is a solution phase reactor.
57. The process of claim the catalysts comprise one or more of the following combinations (where Me equals methyl, Ph equals phenyl, Et equals ethyl, Cp equals cyclopentadienyl, 3,6-di-t-BuFlu equals 3,8-di-tert-butylfluorenyl, 2-Me-4-PhInd equals 2-methyl-4-phenylindenyl, 2-MeInd means 2-methylindenyl, c-C<sub>12</sub>H<sub>23</sub> equals cyclododecyl, Me<sub>4</sub>C<sub>5</sub> - tetramethylcyclopentadienyl, H<sub>4</sub>Ind equals tetrahydroindenyl, and Ind equals indenyl):
  - (1) Me<sub>2</sub>Si(Me<sub>4</sub>C<sub>5</sub>)(N-c-C<sub>12</sub>H<sub>23</sub>)TiCl<sub>2</sub> and rac-Me<sub>2</sub>Si(2-Me-4-PhInd)<sub>2</sub>ZrCl<sub>2</sub> activated with an alumoxane;
  - (2) Me<sub>2</sub>Si(Me<sub>4</sub>C<sub>5</sub>)(N-c-C<sub>12</sub>H<sub>23</sub>)TiMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-Me-4-PhInd)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator,
  - (2a) Me<sub>2</sub>Si(Me<sub>4</sub>C<sub>5</sub>)(N-c-C<sub>12</sub>H<sub>23</sub>)TiMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-Me-4-PhInd)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

- (3)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-c-C}_{12}\text{H}_{23})\text{TiCl}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrCl}_2$   
activated with an alumoxane;
- (4)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-c-C}_{12}\text{H}_{23})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$   
activated with a non-coordinating anion activator;
- (4a)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-c-C}_{12}\text{H}_{23})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$   
activated with N,N-dimethylanilinium  
tetrakis(pentafluorophenyl)boron and or triphenylcarbonium  
tetrakis(pentafluorophenyl)boron;
- (5)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-1-adamantyl})\text{TiCl}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrCl}_2$  activated with an alumoxane;
- (6)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-1-adamantyl})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$  activated with a non-coordinating anion activator;
- (6a)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-1-adamantyl})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$  activated with N,N-dimethylanilinium  
tetrakis(pentafluorophenyl)boron and or triphenylcarbonium  
tetrakis(pentafluorophenyl)boron;
- (7)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-1-adamantyl})\text{TiCl}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrCl}_2$   
activated with an alumoxane;
- (8)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-1-adamantyl})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$  activated with a non-coordinating anion activator;

- (8a)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-1-adamantyl})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$  activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (9)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-t-butyl})\text{TiCl}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrCl}_2$  activated with an alumoxane;
- (10)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-t-butyl})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$  activated with a non-coordinating anion activator;
- (10a)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-t-butyl})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$  activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (11)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-t-butyl})\text{TiCl}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})$  activated with an alumoxane;
- (12)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-t-butyl})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$  activated with a non-coordinating anion activator;
- (12a)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-t-butyl})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$  activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (13)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-exo-norbornyl})\text{TiCl}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrCl}_2$  activated with an alumoxane;

- (14)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-exo-norbornyl})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$  activated with a non-coordinating anion activator;
- (14a)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-exo-norbornyl})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$  activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (15)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-exo-norbornyl})\text{TiCl}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrCl}_2$  activated with an alumoxane;
- (16)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-exo-norbornyl})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$  activated with a non-coordinating anion activator;
- (16a)  $\text{Me}_2\text{Si}(\text{Me}_4\text{C}_5)(\text{N-exo-norbornyl})\text{TiMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$  activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (17)  $(\text{p-Et}_3\text{SiPh})_2\text{C}(\text{Cp})(3,8\text{-di-t-BuFlu})\text{HfCl}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrCl}_2$  activated with an alumoxane;
- (18)  $(\text{p-Et}_3\text{SiPh})_2\text{C}(\text{Cp})(3,8\text{-di-t-BuFlu})\text{HfMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$  activated with a non-coordinating anion activator;
- (18a)  $(\text{p-Et}_3\text{SiPh})_2\text{C}(\text{Cp})(3,8\text{-di-t-BuFlu})\text{HfMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-Me-4-PhInd})_2\text{ZrMe}_2$  activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

- (19)  $(p\text{-Et}_3\text{SiPh})_2\text{C}(\text{Cp})(3,8\text{-di-}t\text{-BuFlu})\text{HfCl}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrCl}_2$  activated with an alumoxane;
- (20)  $(p\text{-Et}_3\text{SiPh})_2\text{C}(\text{Cp})(3,8\text{-di-}t\text{-BuFlu})\text{HfMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$  activated with a non-coordinating anion activator;
- (20a)  $(p\text{-Et}_3\text{SiPh})_2\text{C}(\text{Cp})(3,8\text{-di-}t\text{-BuFlu})\text{HfMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$  activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (21)  $\text{meso-CH}_2\text{CH}_2(\text{Ind})_2\text{ZrCl}_2$  and  $\text{rac-Me}_2\text{Si}(\text{H}_4\text{Ind})_2\text{ZrCl}_2$  activated with an alumoxane;
- (22)  $\text{meso-CH}_2\text{CH}_2(\text{Ind})_2\text{ZrMe}_2$  and  $\text{rac-Me}_2\text{Si}(\text{H}_4\text{Ind})_2\text{ZrMe}_2$  activated with a non-coordinating anion activator;
- (22a)  $\text{meso-CH}_2\text{CH}_2(\text{Ind})_2\text{ZrMe}_2$  and  $\text{rac-Me}_2\text{Si}(\text{H}_4\text{Ind})_2\text{ZrMe}_2$  activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (23)  $\text{meso-CH}_2\text{CH}_2(\text{Ind})_2\text{ZrCl}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrCl}_2$  activated with an alumoxane;
- (24)  $\text{meso-CH}_2\text{CH}_2(\text{Ind})_2\text{ZrMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$  activated with a non-coordinating anion activator;
- (24a)  $\text{meso-CH}_2\text{CH}_2(\text{Ind})_2\text{ZrMe}_2$  and  $\text{rac-Me}_2\text{Si}(2\text{-MeInd})_2\text{ZrMe}_2$  activated with N,N-dimethylanilinium

tetrakis(pentafluorophenyl)boron and or triphenylcarbonium  
tetrakis(pentafluorophenyl)boron;

- (25) meso-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrCl<sub>2</sub> and rac-Me<sub>2</sub>Si(H<sub>4</sub>Ind)<sub>2</sub>ZrCl<sub>2</sub> activated with an alumoxane;
- (26) meso-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(H<sub>4</sub>Ind)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;
- (26a) meso-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(H<sub>4</sub>Ind)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (27) meso-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrCl<sub>2</sub> and rac-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrCl<sub>2</sub> activated with an alumoxane;
- (28) meso-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;
- (28a) meso-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (29) meso-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrCl<sub>2</sub> and rac-Me<sub>2</sub>Si(2-Me-4-PhInd)<sub>2</sub>ZrCl<sub>2</sub> activated with an alumoxane;
- (30) meso-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-Me-4-PhInd)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;

- (30a) meso-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-Me-4-PhInd)<sub>2</sub>ZrMe<sub>2</sub>  
activated with N,N-dimethylanilinium  
tetrakis(pentafluorophenyl)boron and or triphenylcarbonium  
tetrakis(pentafluorophenyl)boron;
- (31) meso-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrCl<sub>2</sub> and rac-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrCl<sub>2</sub>  
activated with an alumoxane;
- (32) meso-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub>  
activated with a non-coordinating anion activator;
- (32a) meso-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub>  
activated with N,N-dimethylanilinium  
tetrakis(pentafluorophenyl)boron and or triphenylcarbonium  
tetrakis(pentafluorophenyl)boron;
- (33) meso-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrCl<sub>2</sub> and rac-Me<sub>2</sub>Si(2-Me-4-  
PhInd)<sub>2</sub>ZrCl<sub>2</sub> activated with an alumoxane;
- (34) meso-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-Me-4-  
PhInd)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;
- (34a) meso-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-Me-4-  
PhInd)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium  
tetrakis(pentafluorophenyl)boron and or triphenylcarbonium  
tetrakis(pentafluorophenyl)boron;
- (35) meso-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrCl<sub>2</sub> and rac-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrCl<sub>2</sub>  
activated with an alumoxane;

- (36) meso-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;
- (36a) meso-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (37) meso-Me<sub>2</sub>Si(2-Me-4-PhInd)<sub>2</sub>ZrCl<sub>2</sub> and rac-Me<sub>2</sub>Si(2-Me-4-PhInd)<sub>2</sub>ZrCl<sub>2</sub> activated with an alumoxane;
- (38) meso-Me<sub>2</sub>Si(2-Me-4-PhInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-Me-4-PhInd)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;
- (38a) meso-Me<sub>2</sub>Si(2-Me-4-PhInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(2-Me-4-PhInd)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (39) meso-CH<sub>2</sub>CH<sub>2</sub>(2-Me-4-PhInd)<sub>2</sub>ZrCl<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(2-Me-4-PhInd)<sub>2</sub>ZrCl<sub>2</sub> activated with an alumoxane;
- (40) meso-CH<sub>2</sub>CH<sub>2</sub>(2-Me-4-PhInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(2-Me-4-PhInd)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;
- (40a) meso-CH<sub>2</sub>CH<sub>2</sub>(2-Me-4-PhInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(2-Me-4-PhInd)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

- (41) meso-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrCl<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(2-MePhInd)<sub>2</sub>ZrCl<sub>2</sub> activated with an alumoxane;
- (42) meso-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;
- (42a) meso-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (43) meso-CH<sub>2</sub>CH<sub>2</sub>(Ind)<sub>2</sub>ZrCl<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(Ind)<sub>2</sub>ZrCl<sub>2</sub> activated with an alumoxane;
- (44) meso-CH<sub>2</sub>CH<sub>2</sub>(Ind)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(Ind)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;
- (44a) meso-CH<sub>2</sub>CH<sub>2</sub>(Ind)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(Ind)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (45) meso-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrCl<sub>2</sub> and rac-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrCl<sub>2</sub> activated with an alumoxane;
- (46) meso-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;
- (46a) meso-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrMe<sub>2</sub> and rac-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;

- (47) meso-CH<sub>2</sub>CH<sub>2</sub>(Ind)<sub>2</sub>ZrCl<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(4,7-Me<sub>2</sub>Ind)<sub>2</sub>ZrCl<sub>2</sub> (4,7-Me<sub>2</sub>Ind = 4,7-dimethylindenyl) activated with an alumoxane;
- (48) meso-CH<sub>2</sub>CH<sub>2</sub>(Ind)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(4,7-Me<sub>2</sub>Ind)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;
- (48a) meso-CH<sub>2</sub>CH<sub>2</sub>(Ind)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(4,7-Me<sub>2</sub>Ind)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (49) meso-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrCl<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(4,7-Me<sub>2</sub>Ind)<sub>2</sub>ZrCl<sub>2</sub> activated with an alumoxane;
- (50) meso-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(4,7-Me<sub>2</sub>Ind)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;
- (50a) meso-Me<sub>2</sub>Si(Ind)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(4,7-Me<sub>2</sub>Ind)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium tetrakis(pentafluorophenyl)boron and or triphenylcarbonium tetrakis(pentafluorophenyl)boron;
- (51) meso-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrCl<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(4,7-Me<sub>2</sub>Ind)<sub>2</sub>ZrCl<sub>2</sub> (4,7-Me<sub>2</sub>Ind = 4,7-dimethylindenyl) activated with an alumoxane;
- (52) meso-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(4,7-Me<sub>2</sub>Ind)<sub>2</sub>ZrMe<sub>2</sub> activated with a non-coordinating anion activator;
- (52a) meso-CH<sub>2</sub>CH<sub>2</sub>(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(4,7-Me<sub>2</sub>Ind)<sub>2</sub>ZrMe<sub>2</sub> activated with N,N-dimethylanilinium

tetrakis(pentafluorophenyl)boron and or triphenylcarbonium  
tetrakis(pentafluorophenyl)boron;

(53) meso-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrCl<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(4,7-Me<sub>2</sub>Ind)<sub>2</sub>ZrCl<sub>2</sub>  
activated with an alumoxane;

(54) meso-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(4,7-Me<sub>2</sub>Ind)<sub>2</sub>ZrMe<sub>2</sub>  
activated with a non-coordinating anion activator;

(54a) meso-Me<sub>2</sub>Si(2-MeInd)<sub>2</sub>ZrMe<sub>2</sub> and rac-CH<sub>2</sub>CH<sub>2</sub>(4,7-Me<sub>2</sub>Ind)<sub>2</sub>ZrMe<sub>2</sub>  
activated with such as N,N-dimethylanilinium  
tetrakis(pentafluorophenyl)boron and or triphenylcarbonium  
tetrakis(pentafluorophenyl)boron;

58. A composition comprising a homopolymer of propylene and or a copolymer of propylene and one or more of butene, pentene, hexene, octene, nonene, and decene, wherein the copolymer comprises less than 50 mole% ethylene, and wherein the homopolymer or copolymer has a Dot T-Peel of 3 or more Newtons; a viscosity of 8000 mPa•sec or less at 190 ° C; a branching index (g') of 0.85 or less measured at the Mz of the polymer; and an Mw of 100,000 or less.
59. The composition of claim 58 wherein the homopolymer or copolymer has an Mz of 20,000-500,000.
60. The composition of claim 58 wherein the homopolymer or copolymer has a SAFT of 60 to 130°C.
61. The composition of claim 58 wherein the homopolymer or copolymer has a shore hardness of 60 or less.

62. The composition of claim 58 wherein the homopolymer or copolymer has a set time of 2 seconds or less.
63. The composition of claim 58 wherein the homopolymer or copolymer has a branching index (g') of 0.80 or less.
64. The composition of claim 58 wherein the homopolymer or copolymer has a heat of fusion of 20-59 J/g.
65. A composition comprising a polymer of propylene, having from 0 to 5 mol% ethylene and from 0 to 40 mol% of a C5 to C12 olefin, and 0 to 10 mol% of a diene where the polymer has:
- a) a Dot T-Peel of 1 Newton or more; and
  - b) an Mw of 100,000 or less; and
  - c) a Mz/Mn of 2-200; and
  - d) an Mw of 100,000 or less and a branching index of 0.5 or less, or an Mw of 75,000 or less and a branching index of 0.6 or less, or an Mw of 50,000 or less and a branching index of 0.7 or less, or an Mw of 30,000 or less and a branching index of 0.98 or less; and
  - d) a peak melting point between 60 and 190°C, and
  - e) a viscosity of 8000 mPa•sec or less at 190°C; and
  - f) a heat of fusion of 70 J/g or less; and
  - g) a Shore A Hardness (as measured by ASTM 2240) of 70 or less; and
  - h) A Shear Adhesion Fail Temperature 40 to 150°C; and
  - i) a set time of 5 seconds or less; and
  - j) an Mw/Mn of 3 to 75; and
  - k) an Mz of 20,000 to 500,000; and
  - l) a melt index of 900 dg/min or less.

66. The composition of claim 1 wherein the composition has a branching index (g') of 0.90 or less measured at the Mz of the polymer.
67. The composition of claim 1 wherein the composition has a branching index (g') of 0.85 or less measured at the Mz of the polymer.
68. The composition of claim 1 wherein the composition has a branching index (g') of 0.80 or less measured at the Mz of the polymer.
69. The composition of claim 1 wherein the composition has a branching index (g') of 0.75 or less measured at the Mz of the polymer.
70. The composition of claim 1 wherein the composition has a branching index (g') of 0.70 or less measured at the Mz of the polymer.
71. The composition of claim 1 wherein the composition has a branching index (g') of 0.65 or less measured at the Mz of the polymer.
72. The composition of claim 1 wherein the composition has a branching index (g') of 0.60 or less measured at the Mz of the polymer.
73. The composition of claim 1 wherein the composition has a branching index (g') of 0.55 or less measured at the Mz of the polymer.
74. The composition of claim 1 wherein the composition has a branching index (g') of 0.50 or less measured at the Mz of the polymer.
75. A continuous process to prepare an adhesive comprising:  
1) combining monomer, solvent, catalyst and activator in a reactor system,

- 2) withdrawing polymer solution from the reactor system,
  - 3) removing at least 10% solvent from the polymer solution,
  - 4) quenching the reaction,
  - 5) devolatilizing the polymer solution to form molten polymer,
  - 6) combining the molten polymer and one or more additives in a static mixer,
  - 7) removing the polymer combination from the static mixer, and
  - 8) pelletizing or drumming the polymer combination.
76. A continuous process to produce a branched olefin polymer comprising:
- 1) selecting a first catalyst component capable of producing a polymer having an Mw of 80,000 or less and a crystallinity of 15% or less under selected polymerization conditions;
  - 2) selecting a second catalyst component capable of producing polymer having an Mw of 80,000 or less and a crystallinity of 50% or more at the selected polymerization conditions;
  - 3) contacting the catalyst components in the presence of one or more activators with propylene and one or more C4 to C20 olefins, and, optionally one or more C4 to C20 diolefins;
  - 4) at a temperature of greater than 105°C;
  - 5) at a residence time of 90 minutes or less;
  - 6) wherein the ratio of the first catalyst to the second catalyst is from 1:1 to 20:1;
  - 7) wherein the activity of the catalyst components is at least 100 kilograms of polymer per gram of the catalyst compounds; and wherein at least 80% of the olefins are converted to polymer.
77. The process of claim 76 wherein:
- a) the olefins comprise propylene and one or more of butene, pentene, hexene,

- heptene, octene; nonene, decene, dodecene; and
- b) the temperature is greater than 110°C; and
  - c) the residence time is 120 minutes or less; and
  - d) the ratio of the first catalyst to the second catalyst is from 1:1 to 1:10.
78. The process of claim 76 wherein the diolefin is selected from the group consisting of 1,6-heptadiene, 1,7-octadiene, 1,8-nonadiene, 1,9-decadiene, 1,10-undecadiene, 1,11-dodecadiene, 1,12-tridecadiene, 1,13-tetradecadiene, cyclopentadiene, vinylnorbornene, norbornadiene, ethylidene norbornene, divinylbenzene, dicyclopentadiene, polybutadienes having an Mw less than 1000 g/mol, butadiene, pentadiene, hexadiene, pentadecadiene, hexadecadiene, heptadecadiene, octadecadiene, nonadecadiene, icosadiene, heneicosadiene, docosadiene, tricosadiene, tetracosadiene, pentacosadiene, hexacosadiene, heptacosadiene, octacosadiene, nonacosadiene, triacontadiene, cyclopentadiene, vinylnorbornene, norbornadiene, ethylidene norbornene, divinylbenzene, dicyclopentadiene, or combinations thereof.
79. The process of claim 76 wherein the olefin comprises propylene and one or more of butene, pentene, hexene, heptene, octene, nonene, decene, dodecene, 4-methyl-pentene-1, 3-methyl pentene-1, and 3,5,5-trimethyl-hexene-1.
80. A continuous process to make an adhesive comprising
- 1) selecting a first catalyst component capable of producing a polymer having an Mw of 100,000 or less and a crystallinity of 20% or less under selected polymerization conditions;

- 2) selecting a second catalyst component capable of producing polymer having an Mw of 100,000 or less and a crystallinity of 40% or more at the selected polymerization conditions;
- 3) contacting, in a solvent and in a reaction zone under the selected polymerization conditions, the catalyst components in the presence of one or more activators with one or more C3 to C40 olefins, and, optionally one or more diolefins;
- 4) at a temperature of greater than 100°C;
- 5) at a residence time of 120 minutes or less;
- 6) wherein the ratio of the first catalyst to the second catalyst is from 1:1 to 50:1;
- 7) wherein the activity of the catalyst components is at least 50 kilograms of polymer per gram of the catalyst compounds; and wherein at least 80% of the olefins are converted to polymer;
- 8) withdrawing polymer solution from the reaction zone;
- 9) removing at least 10% solvent from the polymer solution;
- 10) quenching the reaction;
- 11) devolatilizing the polymer solution to form molten polymer;
- 12) combining the molten polymer and one or more additives in a static mixer;
- 13) removing the polymer combination from the static mixer; and
- 14) pelletizing or drumming the polymer combination.

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81. A polymer comprising one or more C3 to C40 olefins, optionally one or more diolefins, and less than 1 mole % of ethylene where the polymers has:
- a) a Dot T-Peel of 1 Newton or more; and
  - b) a branching index (g') of 0.95 or less measured at the Mz of the polymer; and
  - c) an Mw of 100,000 or less; and

wherein the polymer has at least 2 mol% (CH<sub>2</sub>)<sub>2</sub> units.

82. The polymer of claim 81 wherein the polymer has at least 4 mol% (CH<sub>2</sub>)<sub>2</sub> units.
83. The polymer of claim 81 wherein the polymer has at least 6 mol% (CH<sub>2</sub>)<sub>2</sub> units.
84. The polymer of claim 81 wherein the polymer has at least 8 mol% (CH<sub>2</sub>)<sub>2</sub> units.
85. The polymer of claim 81 wherein the polymer has at least 10 mol% (CH<sub>2</sub>)<sub>2</sub> units.
86. The polymer of claim 81 wherein the polymer has at least 15 mol% (CH<sub>2</sub>)<sub>2</sub> units.
87. The polymer of claim 81 wherein the polymer has at least 20 mol% (CH<sub>2</sub>)<sub>2</sub> units.
88. A polymer comprising one or more C3 to C40 olefins, optionally one or more diolefins, and having between 1 and mole % of ethylene where the polymers has:
- a) a Dot T-Peel of 1 Newton or more; and
  - b) a branching index (g') of 0.95 or less measured at the Mz of the polymer; and
  - c) an Mw of 100,000 or less; and
- wherein the polymer has at least 2 + X mol% (CH<sub>2</sub>)<sub>2</sub> units, where X is the mole % ethylene.

89. The polymer of claim 88 wherein the polymer has at least  $4 + X$  mol%  $(CH_2)_2$  units.
90. The polymer of claim 88 wherein the polymer has at least  $6 + X$  mol%  $(CH_2)_2$  units.
91. The polymer of claim 88 wherein the polymer has at least  $8 + X$  mol%  $(CH_2)_2$  units.
92. The polymer of claim 88 wherein the polymer has at least  $10 + X$  mol%  $(CH_2)_2$  units.
93. The polymer of claim 88 wherein the polymer has at least  $15 + X$  mol%  $(CH_2)_2$  units.
94. The polymer of claim 88 wherein the polymer has at least  $20 + X$  mol%  $(CH_2)_2$  units.
95. A polymer comprising one or more C3 to C40 olefins, optionally one or more diolefins, and less than 50 mole % of ethylene where the polymers has:
- a) a Dot T-Peel of 5 Newton or more ; and
  - b) a branching index ( $g'$ ) of 0.95 or less measured at the Mz of the polymer; and
  - c) an Mw of 100,000 or less.
96. The composition of claim 1 further comprising one or hydrocarbon resins selected from the group consisting of aliphatic hydrocarbon resins, aromatic modified aliphatic hydrocarbon resins, hydrogenated polycyclopentadiene resins, polycyclopentadiene resins, gum rosins, gum

rosin esters, wood rosins, wood rosin esters, tall oil rosins, tall oil rosin esters, polyterpenes, aromatic modified polyterpenes, terpene phenolics, aromatic modified hydrogenated polycyclopentadiene resins, hydrogenated aliphatic resin, hydrogenated aliphatic aromatic resins, hydrogenated terpenes and modified terpenes, and hydrogenated rosin esters.

97. The composition of claim 1 further comprising hydrocarbon resin present at 1 weight % to about 80 weight %.
98. The composition of claim 1 further comprising hydrocarbon resin present at 2 weight % to about 40 weight %.
99. The composition of claim 1 further comprising hydrocarbon resin present at 3 weight % to 30 weight %.
100. The composition of claim 1 further comprising hydrocarbon resin present at 1 weight % to about 80 weight % selected from the group consisting of: C5/C6 terpene resins, styrene terpenes, alpha-methyl styrene terpene resins, C9 terpene resins, aromatic modified C5/C6, aromatic modified cyclic resins, aromatic modified dicyclopentadiene based resins, resins obtained from the cationic polymerization of compositions containing one or more of the following monomers: C5 diolefins; C5 olefins; C6 olefins, C9 vinylaromatics; cyclics; and or terpenes; resins obtained by the thermal polymerization of dicyclopentadiene, and/or the thermal polymerization of dimers or oligomers of cyclopentadiene and /or methylcyclopentadiene, optionally with vinylaromatics.
101. A composition comprising the polymer of claim 1 and having less than 5% hydrocarbon resin.

102. A composition comprising the polymer of claim 1 and having less than 3% hydrocarbon resin.
103. A composition comprising the polymer of claim 1 and having less than 1% hydrocarbon resin.
104. A polymer comprising one or more C3 to C40 olefins where the polymers has:
- a) a Dot T-Peel between 1 and 10,000 Newtons; and
  - b) a branching index (g') of 0.95 or less measured at the Mz of the polymer; and
  - c) an Mw of 100,000 or less.
105. The polymer of claim 104 wherein the polymer has a Dot T-Peel of between 3 and 4000 Newtons.
106. The polymer of claim 104 wherein the polymer has a Dot T-Peel of between 5 and 3000 Newtons.
107. The polymer of claim 104 wherein the polymer has a Dot T-Peel of between 10 and 2000 Newtons.
108. The process of claim 37 wherein the second catalyst component comprises one or more of:
- dimethylsiladiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;
- dimethylsiladiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;
- dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

dimethylsiladiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

dimethylsiladiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

dimethylsiladiyl(2-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

dimethylsiladiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylsiladiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
dimethylsiladiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl  
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

dimethylsiladiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)  
<sub>2</sub>hafnium dichloride;  
 dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)  
<sub>2</sub>hafnium dichloride;  
 dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;  
 dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;  
 dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;  
 dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;  
 dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;  
 dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;  
 9-silafluorendiyl(2-methyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

dimethylsiladiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylsiladiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 9-silafluorendiyl(2-methyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 9-silafluorendiyl(2-methyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)  
<sub>2</sub>hafnium dimethyl;  
 9-silafluorendiyl(2-ethyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)<sub>2</sub>  
 hafnium dimethyl;  
 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)<sub>2</sub>  
 hafnium dimethyl;  
 9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride  
 dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dichloride;  
 dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dichloride;  
 dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dichloride;  
 dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dichloride;  
 dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dichloride;  
 dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)  
<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylsiladiyl(2-isobutyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-di- iso-propylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di- iso-propylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di- iso-propylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;  
 dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
 dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dichloride;

9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dichloride;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium  
dimethyl;  
dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;  
dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium  
dimethyl;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dichloride;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>hafnium dimethyl;

dimethylsiladiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-bis- trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>  
η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>  
η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>  
η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-  
diphenyl-1,3-butadiene;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-  
diphenyl-1,3-butadiene;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl) η<sup>4</sup>-1,4-  
diphenyl-1,3-butadiene;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-  
diphenyl-1,3-butadiene;

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-  
diphenyl-1,3-butadiene;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-  
diphenyl-1,3-butadiene;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-  
diphenyl-1,3-butadiene;

dimethylsiladiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-  
diphenyl-1,3-butadiene;

dimethylsiladiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-  
diphenyl-1,3-butadiene;

dimethylsiladiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-  
diphenyl-1,3-butadiene;

dimethylsiladiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-  
diphenyl-1,3-butadiene;

dimethylsiladiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylsiladiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl) η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

9-silafluorendiyl(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylamidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylamidoborane(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride  
dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

dimethylamidoborane(2-n-propyl, 4-[3',5'-diphenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-iso-propyl, 4-[3',5'-diphenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-n-butyl, 4-[3',5'-diphenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-iso-butyl, 4-[3',5'-diphenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-sec-butyl, 4-[3',5'-diphenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-tert-butyl, 4-[3',5'-diphenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
dimethylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
dimethylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
dimethylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
dimethylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
dimethylamidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-n-propyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-iso-propyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-n-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-iso-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-sec-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-tert-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -  
 1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>  
 $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)  
 $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -  
 1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>  
 $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>  
 $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>  
 $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 dimethylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-  
 diphenyl-1,3-butadiene;

dimethylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub> η<sup>4</sup>-1,4-diphenyl-1,3-butadiene;

dimethylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>

zirconium dimethyl;

dimethylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
dimethylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

dimethylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

diisopropylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

diisopropylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

diisopropylamidoborane(2-ethyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-n-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-n-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-iso-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-bis-trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride  
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

diisopropylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
diisopropylamidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
diisopropylamidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-ethyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-n-propyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-iso-propyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-n-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-iso-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-sec-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-tert-butyl, 4-[3',5'-bis-  
 trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-ethyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -  
 1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>  
 $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-  
 propylphenyl]indenyl)  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>  
 $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>  
 $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>  
 $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-  
 propylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

diisopropylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -  
 1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-  
 diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -  
 1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  
 $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -  
 1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -  
 1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -  
 1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -  
 1,4-diphenyl-1,3-butadiene;  
 diisopropylamidoborane(2-methyl, 4-[3',5'-di-  
 tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;  
 diisopropylamidoborane(2-ethyl, 4-[3',5'-di-  
 tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;  
 diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-  
 tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;  
 diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-  
 tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;  
 diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-  
 tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;  
 diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-  
 tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;  
 diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-  
 tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;

diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-  
tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-ethyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-n-propyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-n-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-iso-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-ethyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl  
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

diisopropylamidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
diisopropylamidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-  
tbutylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride

bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dichloride;

bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dichloride;  
bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  
 $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  
 $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-  
tbutylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;

bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>  $\eta^4$ -1,4-diphenyl-1,3-butadiene;  
bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-tbutylphenyl]indenyl)<sub>2</sub> zirconium dimethyl;

bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-  
tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-  
tbutylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-bis-  
trifluoromethylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl  
bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-iso-  
propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;

bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-iso-propylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 bis(trimethylsilyl)amidoborane(2-methyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 bis(trimethylsilyl)amidoborane(2-ethyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 bis(trimethylsilyl)amidoborane(2-n-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 bis(trimethylsilyl)amidoborane(2-iso-propyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 bis(trimethylsilyl)amidoborane(2-n-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 bis(trimethylsilyl)amidoborane(2-iso-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl;  
 bis(trimethylsilyl)amidoborane(2-sec-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl; or  
 bis(trimethylsilyl)amidoborane(2-tert-butyl, 4-[3',5'-di-phenylphenyl]indenyl)<sub>2</sub>zirconium dimethyl.

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109. A polymer comprising one or more C3 to C40 olefins and less than 1 mole % of ethylene where the polymer has:
  - a) a Dot T-Peel of 1 Newton or more; and
  - b) a branching index (g') of 0.95 or less measured at the Mz of the polymer; and
  - c) an Mw of 100,000 or less; and  
 the polymer has an amorphous component which contains at least 3 mol% (CH<sub>2</sub>)<sub>2</sub> units.
110. The polymer of claim 109 where the amorphous component contains at least 6 mol % (CH<sub>2</sub>)<sub>2</sub> units.

111. The polymer of claim 109 where the amorphous component contains at least 10 mol %  $(\text{CH}_2)_2$  units.
112. The polymer of claim 109 where the amorphous component contains at least 15 mol %  $(\text{CH}_2)_2$  units.
113. The polymer of claim 109 where the amorphous component contains at least 20 mol %  $(\text{CH}_2)_2$  units.
114. A polymer comprising one or more C3 to C40 olefins and between 1 and 5 mole % of ethylene where the polymer has:
- a) a Dot T-Peel of 1 Newton or more; and
  - b) a branching index ( $g'$ ) of 0.95 or less measured at the Mz of the polymer; and
  - c) an Mw of 100,000 or less; and
- the polymer has an amorphous component which contains at least 3 + X mol%  $(\text{CH}_2)_2$  units, where X is the mol % ethylene in the polymer.
115. The polymer of claim 114 where the amorphous component contains at least 6 + X mol %  $(\text{CH}_2)_2$  units.
116. The polymer of claim 114 where the amorphous component contains at least 10 + X mol %  $(\text{CH}_2)_2$  units.
117. The polymer of claim 114 where the amorphous component contains at least 15 + X mol %  $(\text{CH}_2)_2$  units.

118. The polymer of claim 114 where the amorphous component contains at least  $20 + X$  mol %  $(\text{CH}_2)_2$  units.